Acta Psychiatr Scand 2004: 110: 323–337
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ACTA PSYCHIATRICA SCANDINAVICA

Review article

On phenomenology and classification of hoarding: a review

Maier T. On phenomenology and classification of hoarding: a review. Acta Psychiatr Scand 2004: 110: 323–337. © Blackwell Munksgaard 2004.

Objective: Hoarding is a behavioural abnormity characterized by the excessive collection of poorly useable objects. It is described mainly in association with obsessive–compulsive disorders (OCDs) and in geriatric populations. Yet the literature on the phenomenon is heterogeneous and the notion obviously lacks a consistent definition. This review attempts to describe the psychopathological and clinical spectrum of hoarding and may contribute to clarify its classification.
Method: Systematic review and discussion of the literature on hoarding.
Results: Hoarding is a complex behavioural phenomenon associated with different mental disorders. The psychopathological structure is variously composed of elements of OCDs, impulse-control disorders, and ritualistic behaviour. Severe self-neglect is a possible consequence of hoarding.
Conclusion: Without further specifications the term *hoarding* is of limited heuristic value and cannot guide therapeutic interventions satisfactorily. The condition needs to be evaluated carefully in every particular case in relation to the aforementioned psychopathological concepts.

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Key words: obsessive–compulsive disorders; impulse-control disorders; classification; geriatric psychiatry

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Accepted for publication June 8, 2004

Introduction

The term *hoarding* has gradually become more and more common in psychiatric literature over the last years. The notion describes a behavioural phenomenon characterized by the excessive collection and failure of discard of poorly useable objects (1). Some obscurity arises however when analysing the literature on the topic: obviously there is no consistent definition of hoarding, and the term is used in different clinical and non-clinical contexts to describe a broad spectrum of behavioural abnormities.

Initially *hoarding* was introduced in scientific terminology mainly to describe food collecting behaviour in animals, especially in rodents (2–4). Still today most papers published on hoarding treat of animals and are presenting research about changes in hoarding behaviour under different experimental conditions. It is not the aim of this paper to review these contributions, although some colleagues might be interested in those results because of possible implications for the understanding of hoarding in humans. It was in 1966 when Bolman and Katz (5) used the term for the first time to describe a psychopathological phenomenon in an anecdotic case report. In the following years more and more articles have been published about different types of excessive collecting behaviour in humans. The mental disorders reported in association with the condition cover almost the whole range of psychiatric diseases. So it appears that hoarding is either a very unspecific symptom or a collective name for various similar, but distinct symptoms. The controversy about the nosological status of hoarding is still unresolved (6). Some authors comprehend it as a defined and uniform symptom, others claim it to be a syndrome (7–10). Hoarding is indeed considered to be the main symptom of *Diogenes syndrome* (11) and has often been reported in association with self-neglecting behaviour, especially in geriatric literature. In recent years although the condition is mainly described and discussed as a possible symptom of obsessive–compulsive disorder (OCD), in fact many authors consider hoarding to be a compulsion.

Others emphasize more the similarities with impulse-control disorders and report associations with other disorders of that spectrum and with tic disorders (TDs). Differences of interpretation may arise from different perspectives towards the phenomenon: whether one concentrates on the action of collecting and acquiring of objects or more on the condition of keeping and the avoidance of discarding, one might come to different interpretations of the behaviour. Furthermore the validation of hoarding as pathological is controversial, as there are reports about hoarding individuals without diagnosis of any mental or physical disorder. In addition, self-help movements seem to define hoarding more as a phenomenon within the span of normal human behaviour than as pathologic.

Aims of the study

A review of the literature on hoarding may help to understand more about the clinical variety of the phenomenon. Critical reflection of the used terms and concepts could contribute to improve the assessment and clarify the classification of hoarding.

Material and methods

Through a MEDLINE search the literature on hoarding from 1952 until August 2003 was retrieved using the keywords 'hoarding' and 'Diogenes syndrome'. The search produced a total of 327 articles, of which in fact 90 were about hoarding behaviour in humans. The analysis of references produced 12 additional papers of relevance. From a methodological viewpoint, the 102 retrieved articles can be separated in the following groups:

1. Empirical studies focussing explicitly and exclusively on hoarding, and assessing hoarding behaviour in clinical or non-clinical populations. The aims, size and methodological qualities of these studies vary in a wide range (15 studies) (Table 1).
2. Empirical studies focussing primarily on other symptoms and syndromes (OCD, Prader-Willi (PW) syndrome, TDs, self-neglect in geriatric populations, eating disorders, etc.) assessing hoarding behaviour only additionally among other symptoms. These studies are of some relevance for the understanding of hoarding (18 studies) (Table 2).
3. Case reports, anecdotic reports, reviews and theoretical papers about hoarding. These papers are reviewed to learn about their use of concepts and definitions of hoarding and about theoretical considerations on hoarding (69 papers).

Results

As there is no 'official' definition of hoarding, and the term is not explicitly comprehended in the diagnostic manuals DSM-IV or ICD-10, only a few empirical studies focussing directly on hoarding have been published so far. Hoarding is considered in DSM-IV to be a possible symptom of OCD (although not explicitly mentioned) and is mentioned in the definition of obsessive–compulsive personality disorder (OCPD): 'is unable to discard worn-out or worthless objects even when they have no sentimental value' (12). Many authors are using the notion in their papers, but often fail to specify, which definition they applied. Furthermore there is no consensus about the measurement of hoarding in the presented literature. If validated instruments are used to assess hoarding, they were selected according to the presumed nature of the phenomenon: Yale-Brown Obsessive Compulsive Scale (Y-BOCS) (13, 14) is most commonly used, while the behaviour is considered an obsessive–compulsive symptom. Only a few authors were using different specific assessment scales like Saving Inventory Revised (15), Hoarding scale (16), Elgin Behavioural Rating Scale (17, 18), specific hoarding questionnaire (19) or others [cf. (6) for a critical comment of assessment instruments].

Thematically (i.e. independently from the abovementioned methodological qualities) the retrieved papers can be separated into two groups concerning about two different (but still apparently not homogenous) types of patients and in a third group with miscellaneous reports on hoarding. Astonishingly, there appears to be only a limited overlap and few mutual citations between the papers of the different groups. This may indicate, that researchers are approaching the phenomenon from very different directions:

1. Literature reporting about mostly elderly patients, hoarding rubbish, neglecting their homes and themselves, some of them displaying different diagnoses like dementia (especially frontal type), schizophrenia or schizotype disorder, alcoholism, bipolar disorder, OCD. Often the notion *Diogenes syndrome* is used.
2. Studies and case reports concerning about OCDs. Especially the more recent publications on hoarding are about patients with OCD or OCPD. The notion *Diogenes syndrome* is rarely used in this group of papers.

Table 1. Studies about hoarding

Reference	Title	Size and type of sample	Aims of study	Measurement instruments	Main findings
Coles et al. 2003 (15)	Hoarding behaviour in a large college sample	563 unselected college students	Examine hoarding behaviours in a large, unselected non-clinical sample	Saving Inventory Revised (SI-R), Savings Cognitions Inventory-Revised (SCI-R), Obsessive Compulsive Inventory (OCI), Social Interaction Anxiety Scale (SIAS), Penn State Worry Questionnaire (PSWQ), Anxiety Sensitivity Index (ASI), Beck Depression Inventory (BDI)	Hoarding behaviour is associated with other OC symptoms, anxiety and depressive symptoms. No absolute frequencies of symptoms are reported
Samuels et al. 2002 (76)	Hoarding in OCD: results from a case–control study	126 OCD patients (90 without, 36 with hoarding)	Comparison of OCD hoarders with OCD non-hoarders with regard to symptom severity and comorbidity	Schedule for Affective Disorders and Schizophrenia-Lifetime Anxiety (includes tic and impulse-control sections and Y-BOCS)	30% of OCD patients have hoarding obsessions or compulsions. Hoarders have more severe OC symptoms and earlier onset, higher comorbidity with social phobia, depression and hypomania
Saxena et al. 2002 (7)	Obsessive–compulsive hoarding: symptom severity and response to multimodal treatment	190 OCD patients, 20 of them with hoarding	Assessment and open treatment for all patients with CBT, medication and psychosocial rehabilitation during 6 weeks	Y-BOCS, Hamilton Rating Scale for Depression (HAM-D), Hamilton Rating Scale for Anxiety (HAM-A), Global Assessment Scale (GAS)	Hoarding and non-hoarding OCD patients improved under treatment, but hoarders showed significantly poorer response.
Seedat and Stein 2002 (19)	Hoarding in obsessive–compulsive disorder and related disorders: a preliminary report of 15 cases	15 individuals with hoarding behaviour	Describe history, demographics, phenomenology and associated psychopathology of 15 cases of hoarding	SCID I + II, Y-BOCS, self-created hoarding questionnaire	Hoarding may meet the criterion for a compulsion in DSM-IV, yet there is evidence that it may manifest in a variety of other psychiatric conditions
Zhang et al. 2002 (97)	Genomewide scan of hoarding in sib pairs in which both sibs have Gilles de la Tourette syndrome	77 siblings with hoarding behaviour and Tourette syndrome	Find correlations of hoarding phenotype with genotypes in Tourette patients	Specifically developed interview based on Y-BCOS and Yale global tic severity scale	Hoarding in Tourette patients is linked with three regions on three chromosomes (4q, 5q, 17q).
Kim et al. 2001 (27)	Hoarding by elderly people	62 individuals with hoarding behaviour	Survey among elder service providers about cases of hoarding. Evaluation of demographic and social parameters.	Structured telephone interview	Hoarding in elderly subjects is associated with significant impairment. Hoarders are manly single females.
Frost et al. 2000 (16)	Mood, personality disorder symptoms and disability in obsessive–compulsive hoarders: a comparison with clinical and non-clinical controls	104 subjects (37 OCD hoarders, 20 OCD non-hoarders, 13 other anxiety disorders, 34 controls)	Comparison of OCD hoarders with other OCD and anxiety patients and non-clinical controls for comorbidity and disability	Y-BCOS, Hoarding Scale, Padua Inventory, Beck Depression and Anxiety Inventory, Sheehan Disability Inventory, Personality Diagnostic Questionnaire-4	Hoarding is associated with significant comorbidity and impairment compared with non-hoarding OCD and other anxiety patients.
Frost et al. 2000 (28)	Hoarding: a community health problem	471 cases of hoarding, 58 cases described in more detail	Survey among health officers about cases of hoarding. Evaluation of prevalence and social circumstances.	Mailed questionnaires	Hoarding prevalence found 26 per 100 000. Hoarding can seriously endanger health. Treatment is often difficult because of poor insight
Winsberg et al. 1999 (88)	Hoarding in obsessive–compulsive disorder: a report of 20 cases	20 OCD patients with hoarding behaviour	Description of demographic characteristics, phenomenology, comorbidity, family history and treatment response in 20 cases of hoarding	Structured clinical Interview for DSM-III-R, Y-BOCS, semistructured interview	Onset of hoarding is between 5 and 46 years, high association with major depression and compulsive buying, often family history of hoarding
Hwang et al. 1998 (25)	Hoarding behaviour in dementia. A preliminary report	133 hospitalized dementia patients	Investigation of prevalence of hoarding behaviour in hospitalized dementia patients	Behavioral Pathology in Alzheimer's Disease Rating Scale (BEHAVE-AD)	Prevalence of hoarding behaviour in hospitalized dementia patients is 22.6%

Table 1. Continued

Reference	Title	Size and type of sample	Aims of study	Measurement instruments	Main findings
Black et al. 1998 (80)	Hoarding and treatment response in 38 non-depressed subjects with OCD	38 OCD patients	Clinical trial. Treatment with paroxetine ($n = 20$), placebo ($n = 8$), or CBT ($n = 10$). Analysis of outcomes with regard to different symptom dimensions	Y-BOCS, SCL-90R, Maudsley Obsessive–Compulsive Inventory	Presence of hoarding in OCD patients predicts poor treatment response
Stein et al. 1997 (26)	Hoarding symptoms in patients on a geriatric psychiatry inpatient unit	100 consecutive patients admitted to a geriatric inpatient unit	Assessment of frequency and relation to other disorders of hoarding in a geriatric psychiatry population	Clinical assessment, structured questionnaire	Clinically significant hoarding in 5% of unselected geriatric psychiatry inpatients. Associations with schizophrenia, bipolar disorder and dementia
Frost et al. 1996 (78)	Hoarding and obsessive–compulsive symptoms	Three separate studies: (i) 45 female psychology students, (ii) 11 hoarders, 16 non-hoarders, (iii) 39 OCD patients	Assessment of hoarding and OCD symptoms among OCD patients, non-clinical hoarders, and non-clinical community samples	Y-BOCS, Hoarding scale (122) Millon Clinical Multiaxial Inventory-II, Brief Symptom Inventory	Hoarding is associated with higher levels of general psychopathology. 31% of OCD patients report hoarding obsessions, 26% hoarding compulsions
Frost et al. 1995 (121)	The value of possessions in compulsive hoarding: patterns of use and attachment	101 female undergraduates, 52 self-declared chronic savers or packrats	Assessment of two different samples for patterns of use of possessions and emotional attachment to possessions.	Hoarding Scale (122) and other specific instruments developed by the authors	Hoarding behaviour is associated with characteristic attitudes and emotions towards possessions
Frost and Gross 1993 (122)	The hoarding of possessions	20 hoarders, 50 community controls (two preliminary studies are also presented with 90 non-clinical students and 32 hoarders)	Evaluate reliability and validity of Hoarding Scale. Assessment of features associated with hoarding, especially perfectionism, indecisiveness and compulsivity	Hoarding Scale, Maudsley Obsessive–Compulsive Inventory, Obsessive Thoughts Questionnaire, and several further specific instruments, partly developed by the authors	Hoarding Scale is reliable and valid. Hording is an avoidance behaviour associated with other OC symptoms, indecisiveness, and perfectionism.

3 In the miscellaneous group, there are reports about hoarding behaviour in patients suffering from eating disorders, pathological gambling, brain damages, schizophrenia, PW syndrome, autistic disorders, TDs (including Tourette's syndrome). There are also reports about hoarding in subjects without psychiatric diagnosis.

Hoarding in Diogenes syndrome and self-neglect

In 1975, Clark et al. (11) published an article in the *Lancet* 'Diogenes syndrome. A clinical study of gross neglect in old age', where they presented 30 cases of elderly people (age 66–92 years) with extreme neglect of their homes as well as of their own personal appearance and health. A behavioural abnormity they found in some (but not all) of these patients was described as *hoarding of rubbish*, also introducing the notion *syllogomania* (from Greek '$\sigma\upsilon\lambda\lambda\varepsilon\gamma\omega$', to put together, collect). The authors diagnosed different somatic and/or psychiatric disorders in these patients, however half of them showed no evidence of mental disorder and even possessed higher than average intelligence. Clark and colleagues proposed to call the observed condition *Diogenes syndrome* (after the Greek philosopher who lived in a barrel), defining it as a combination of self-neglect, neglect of the surrounding dwelling space, collecting of large quantities of useless items (newspapers, bottles, cans, rags, rubbish, etc.), social retreat, lack of insight, and refusal of treatment and help. As a reaction to this article several letters were published in the following issues of the *Lancet*, adding different remarks to the Diogenes syndrome. They made clear that the described condition was not unknown to other physicians (20–22). In 1966, already Macmillan and Shaw (23) had reported about 72 geriatric patients with extreme neglect of themselves and their houses. The authors proposed to call the condition a syndrome, but did not introduce a distinct name for it. Starting with these first papers of Clark (11) and Macmillan (23), a considerable number of articles have described the above-mentioned neglecting and hoarding behaviour in elderly people, and also in geriatric textbooks the condition is mentioned (24).

Empirical studies of satisfactory size and methodological quality about hoarding in the elderly and self-neglect have been published by Hwang et al. (25), Stein et al. (26), Kim et al. (27), Frost et al. (28), and Hurley et al. (29).

Hwang et al. (25) published a study in 1998, where they evaluated 133 geriatric patients

Table 2. Studies evaluating hoarding as an additional symptom

Author	Title	Aims and characteristics
Hantouche et al. 2003 (84)	Cyclothymic OCD: a distinct form?	628 OCD patients assessed with self-rating questionnaires. Aim: Evaluate the prevalence of cyclothymic forms of OCD. Among them hoarding is frequent
Halmi et al. 2003 (90)	Obsessions and compulsions in AN subtypes	324 AN patients assessed in personal interviews, including Y-BOCS. Aim: Evaluate the prevalence of OC symptoms (including hoarding) in different subtypes of AN
Mataix-Cols et al. 2002 (82)	Obsessive–compulsive symptom dimensions as predictors of compliance with and response to behaviour therapy: results from a controlled trial	153 OCD patients randomly treated either with computer-guided or with clinician-guided behavioural therapy. Aim: Evaluate response and compliance to BT of OCD patients. Presence of hoarding was associated with poorer outcome
Hanna et al. 2002 (72)	Obsessive–compulsive disorder with and without tics in a clinical sample of children and adolescents	Assessment of 60 children and adolescents with OCD using Child Y-BOCS. Aim: Differentiate OC symptoms severity (including hoarding) and quality in relation to tic disorders
Clarke et al. 2002 (100)	PW syndrome, compulsive and ritualistic behaviours: the first population-based survey	Assessment of 97 patients with PW syndrome for compulsive and ritualistic behaviours (including hoarding). Use of specially developed Prader-Willi Structured Interview Questionnaire.
Frost et al. 2001 (96)	Obsessive–compulsive features in pathological lottery and scratch-ticket gamblers	Assessment of 89 pathological gamblers with Y-BOCS, Hoarding scale, Y-BOCS acquiring and saving scale, Compulsive acquisition scale. Comparison of light vs. heavy gamblers for additional impulsive and obsessive–compulsive symptoms
Hurley et al. 2000 (29)	Adult service refusers in the greater Dublin area	Structured interviews of service agency staff. Among 233 service refusers, 54.1% were identified as hoarders
Moll et al. 2000 (73)	Quantitative and qualitative aspects of obsessive–compulsive behaviour in children with attention-deficit hyperactivity disorder compared with tic disorder	Assessment of 42 healthy controls, 41 children with ADHD, and 38 children with TD for OC symptoms. Use of Leyton Obsessional Inventory-Child Version (LOI-CV), the Child Behaviour Checklist (CBCL) and an expert-rated structured parent interview.
Mataix-Cols et al. 1999 (81)	Use of factor-analysed symptom dimensions to predict outcome with serotonin reuptake inhibitors and placebo in the treatment of OCD	354 OCD patients treated with different antidepressants or with placebo. Outcomes analysed in relation to different symptom dimensions (including hoarding). Use of Y-BOCS.
Summerfeldt et al. 1999 (75)	Symptom structure in obsessive–compulsive disorder: a confirmatory factor-analytic study	Assessment of 203 OCD patients using Y-BOCS. Aim: identify subgroups of OCD, evaluation of existing models of symptom structure
Calamari et al. 1999 (74)	OCD subgroups: a symptom-based clustering approach	Assessment of 106 OCD patients using Y-BOCS. Aim: identify subgroups of OCD
Dykens et al. 1996 (99)	Obsessions and compulsions in PW syndrome	Assessment of 91 subjects with PW syndrome for obsessive–compulsive symptoms (including hoarding). Also comparison of 43 adult PW patients with age and sex matched OCD patients for OCD symptoms. Use of Y-BCOS
Tracy et al. 1996 (17)	Repetitive behaviours in schizophrenia: a single disturbance or discrete symptoms?	Assessment of 400 chronic schizophrenia inpatients for repetitive behaviours using Elgin Behavioural Rating Scale.
Hantouche and Lancrenon 1996 (86)	Modern typology of symptoms and obsessive–compulsive syndromes: results of a large French study of 615 patients	Assessment of 615 OCD patients with Y-BOCS Symptom Checklist (Y-BOCS-CL). Aim: identify subgroups of OCD
McDougle et al. 1995 (101)	A case-controlled study of repetitive thoughts and behavior in adults with autistic disorder and obsessive–compulsive disorder	50 adult patients with autism assessed with Y-BOCS and compared with 50 adult OCD patients with regard to repetitive behaviours (including hoarding)
Baer 1994 (71)	Factor analysis of symptom subtypes of OCD and their relation to personality and tic disorders	107 OCD patients assessed with Y-BOCS. Aim: Identify subtypes of OCD
Luchins et al. 1992 (18)	Repetitive behaviours in chronically institutionalized schizophrenic patients	32 institutionalized schizophrenics assessed with Elgin Behavioral Rating Scale for repetitive behaviours
Clark et al. 1975 (11)	Diogenes syndrome. A clinical study of gross neglect in old age	First description of Diogenes syndrome. Clinical assessment of 30 cases

admitted to a psychiatric hospital in Taiwan because of dementia. The authors described hoarding behaviour in 22.6% of these, measured with Behavioral Pathology in Alzheimer's Disease Rating Scale (BEHAVE-AD). Hoarding occurred in various types of dementia and was associated with other repetitive and rather unintentional behaviours such as hyperphagia and pilfering. Hwang and colleagues considered hoarding to be a common symptom of dementia. Again Hwang (30) had reported in a previous study already about hoarding as one of the eight main behavioural problems in 75 psychiatric inpatients with Alzheimer dementia. Patients were assessed with a semistructured interview of the families and through ward observation. Stein et al. (26) assessed 100 consecutive non-selected patients in a geriatric psychiatric inpatient unit with a clinical assessment and a semistructured interview. They found clinically significant hoarding in five patients (=5%).

Four of them were diagnosed as schizophrenic (paranoid type), one as manic (bipolar disorder), but in all five patients additional symptoms of beginning dementia were found. Treatment with dopamine-blocking neuroleptic medication was successful in three of five patients to make the hoarding behaviour fade away. Hurley et al. (29) performed a study on 235 adult service refusers in the greater Dublin area, i.e. persons who refused offered free help like meals-on-wheels, home-helps, house cleaning, medical services, etc. Information was obtained by structured interviews of service agency staff. The majority (69.7%) of service refusers had age over 65 years and 54.1% showed hoarding behaviour. In 47% the authors diagnosed full Diogenes syndrome. About 30% of the patients meeting the criteria for Diogenes syndrome were under 65 years of age. Kim et al. (27) performed a structured telephone interview with service providers and gathered information about 62 elderly subjects with hoarding behaviour. The hoarding individuals were reported as mainly females, living alone, having poor insight and posing serious threat to their own health because of bad hygiene. In a similar study, Frost et al. (28) collected information from 88 health officers about a total of 471 hoarding individuals and could estimate a 5-year prevalence rate of severe hoarding in the general population of 26.7 cases per 100 000 inhabitants. Because of the indirect design of the study, no data about the age of the hoarders were obtained.

Klosterkötter and Peters (31) reviewed in 1985 the available literature on the Diogenes syndrome and added a presentation of two own cases. They underlined that patients with this kind of extreme self-neglect do not necessarily have to be psychotic (as most of the psychiatrists assumed at that time). They suspected self-isolation tendencies to be present in earlier life already, and the Diogenes syndrome to be the final result of a personality-based abnormal emotional development. Roberge (32) published in 1998 a review of the literature on the Diogenes syndrome, stating that the condition is not defined clearly and the reference to the Greek philosopher misleading. The author recognized the phenomenon as a geriatric syndrome posing complex clinical, social and ethic challenges to the involved physicians. Reyes-Ortiz (33) also reviewed the geriatric literature on Diogenes syndrome and introduced a distinction between 'primary' and 'secondary' Diogenes syndrome, the latter being related to mental disorders. This distinction reflects the observation that a large number of individuals with Diogenes syndrome apparently do not suffer from any diagnosable mental disorder. Beauchet et al. (34) although presented four cases of Diogenes syndrome in elderly patients. They found a dementia characterized by frontal dysfunction in every case and concluded therefore the syndrome being a particular behavioural demonstration of this disorder. Hogstel (35) and Brannstrom (36) report about hoarding as a typical behavioural problem in geriatric psychiatry, posing particular challenges for handling and treatment. Radebaugh et al. (37) found in their study on social breakdown syndrome in the elderly population in the majority of the cases no mental disorder. Kummer et al. (38) described sleep–wake rhythm disorders in a patient with Diogenes syndrome, but no other mental disorder. Zolpidem and behavioural therapy improved sleep architecture, and partial reintegration of the patient was achieved. Several further case reports and review articles on Diogenes syndrome have been published (39–45), strikingly a lot are from Ireland (29, 46–50). Vostanis and Dean (51) reported two cases of adult persons with severe self-neglect. Although the subjects had a history of schizoid and paranoid personality traits, the authors could not attribute a particular psychiatric diagnosis to them at the time of the evaluation. Williams et al. (52) reported about Diogenes syndrome in patients with intellectual disability. Only a few papers focus directly on the relation of substance abuse (mainly alcohol) with severe self-neglect (53–55). Some authors reported about couples or women with children living in self-neglecting conditions, (56–58) especially the latter posing serious ethical dilemmas to the involved physicians. O'Mahoney and Evans (57) introduced the notion *Diogenes syndrome by proxy* for this condition. Clark, the first author of Diogenes syndrome, had already realized the eminent community and nursing problems provoked by people with severe self-neglect (11, 59, 60); many papers after him comment on various problems of social workers and nurses with self-neglecting people (28, 29, 32, 55, 58, 61–68). Some authors discussed, whether extreme self-neglecting behaviour in old people is a form of indirect self-destructive, even suicidal behaviour (69, 70).

Hoarding in OCD patients

From the early nineties the association of hoarding with OCDs came more and more into the focus of clinicians. Several studies of good quality in terms of size and methods have been published in recent years aiming to identify subgroups in OCD patients. The debate on this problem is still continuing, but most of these studies recognized a somehow distinct position of hoarding within the

spectrum of OCD symptoms. In 1994, Baer (71) tried to identify subgroups of OCD patients by performing factor analysis on the data of 107 patients assessed with the Yale-Brown Obsessive Compulsive Scale Symptom Checklist (Y-BOCS-CL). The author found out that from the three definable clusters, only the *symmetry/hoarding* cluster was significantly related to comorbid disorders such as OCPD, Tourette's syndrome and chronic TD [cf. also (72) and (73) as discussed below]. Calamari et al. (74) did a similar study in 1999 with 106 OCD patients also using the Y-BOCS. They came to the conclusion that five distinct clusters described best their data: harming, contamination, certainty, obsessionals and hoarding. Summerfeldt et al. (75) concluded in their factor-analytic study of 203 OCD patients, that OCD symptoms are of multidimensional nature and that a comprehensive model had yet to be identified. In a recent study, Samuels et al. (76) explored 126 OCD patients using a Y-BOCS-based instrument. Among their patients they found 30% with hoarding symptoms. The hoarders had an earlier onset of symptoms, more severe symptoms, higher prevalences of social phobia, personality disorders, and pathological grooming behaviours (skin picking, nail biting, trichotillomania). Ball et al. (77) were also interested in OCD subtypes and performed a meta-analysis of 65 behavioural therapy studies with OCD patients. They found that only a few studies have been carried out on patients with symptoms such as counting, symmetry and hoarding. As these patients are considered more difficult to treat, such studies are encouraged by the authors.

Frost published several important studies on hoarding as well as on OCD. He considers hoarding to be a common symptom of OCD and reported 31% of an OCD sample ($n = 39$) to have hoarding obsessions and 26% to have hoarding compulsions (78), measured with Y-BOCS. In the same paper it was demonstrated, that subjects with hoarding symptoms (with or without additional OCD symptoms) have higher levels of general psychopathology than subjects without hoarding. In a later study Frost et al. (16) confirmed and specified this finding: OCD hoarders showed higher scores on depression, anxiety, family and social disability, personality disorder symptoms compared with OCD non-hoarders, anxiety disorder patients and non-clinical controls. Mataix-Cols et al. (79) found a strong relation of hoarding OCD patients with comorbid personality disorders, especially of cluster C. Black et al. (80) presented results of a randomized controlled trial, where 38 non-depressed OCD patients were treated during 12 weeks either with paroxetine ($n = 20$), placebo ($n = 8$) or cognitive-behavioural therapy (CBT) ($n = 10$). The authors noticed that patients with hoarding obsessions and corresponding compulsions showed significantly poorer outcomes. For measurement the authors used Y-BCOS, SCL-90-R and Maudsley Obsessive–Compulsive Inventory. Also in the large OCD treatment study of Mataix-Cols et al. (81) ($n = 354$), the presence of hoarding as a symptom of OCD was associated with poorer outcome. The same author (82) presented later results of a randomized controlled trial of 153 OCD outpatients who underwent computer- vs. clinician-guided behavioural therapy. Patients with high scores in the 'hoarding' dimensions were more likely to drop out prematurely and improved less than the other OCD patients. Saxena et al. (7) administered multimodal treatment (medication, cognitive behavioural therapy, psychosocial rehabilitation) to 190 patients with OCD, among them 11% with compulsive hoarding symptoms. Before and after treatment hoarders had significantly lower scores in Global Assessment Scale and higher scores in Hamilton Rating Scale for Anxiety than non-hoarders. Y-BOCS scores before treatment were on the same level, after treatment non-hoarders had greater decreases than hoarders. The authors conclude that OCD patients with hoarding have weaker response to treatment, but still improve significantly under intensive multimodal treatment. They also suggest compulsive hoarding being a distinct, more disabling variant of OCD. A similar opinion expressed Cermele et al. (8) when suggesting the exploration of compulsive hoarding as a separate distinct syndrome. They presented a case study of a successful cognitive-behavioural intervention in a compulsive hoarder. Christensen and Greist (83) were able to study a group of 12 OCD hoarders, from which six underwent a behavioural therapy of at least 10 weeks. The authors recognized that: (i) all of them were pushed into therapy by a 'significant other', (ii) had ego-syntonic hoarding behaviour, (iii) showed marked indecision, (iv) tried to please the investigators with obvious overestimation of improvement on self-assessment scales, and (v) outcome on objective measures and clinician assessment scales was poor.

Seedat and Stein (19) report about 15 cases of hoarders, all of them with diagnoses of the OCD spectrum and give demographic and phenomenological descriptions. Eleven of their subjects were females, the mean duration of hoarding symptoms was 13 years, only one person saw her behaviour as an illness warranting treatment. The authors used Y-BOCS for assessment and additionally a

self-created hoarding questionnaire. Hanna et al. (72) assessed a sample of children and adolescents with OCD using Child Y-BCOS. They found that ordering, washing and hoarding compulsions were less frequent in children who had a history of tics. Hantouche et al. (84, 85) studied a large number of French OCD patients ($n = 574$) mainly to discover comorbidity with monopolar and bipolar disorders. They found that 52% of them could be classified as *cyclothymic OCD*, a subgroup of OCD characterized also by more severe obsessive–compulsive symptoms, including hoarding [cf. also the earlier study from the same author (86)]. Stein et al. (87) published a review of hoarding as a symptom of OCD and OCPD. They stated however that hoarding has also been documented in association with other psychiatric disorders, and further research on the phenomenology, psychobiology and treatment of hoarding is needed.

An interesting and thorough analysis of 20 OCD patients with hoarding was presented by Winsberg et al. (88). The authors studied nine female and 11 male subjects using Y-BOCS and a semistructured interview. Seventeen reported a family history of hoarding, 16 grew up in a household where someone else hoarded. The most frequent motive for hoarding were fears of discarding something useful or something that might be needed in the future. The patients showed high lifetime prevalence of major depression and impulse-control disorders, especially compulsive shopping. Fitzgerald (89) presented a case of a 22-year-old male with an early childhood history of collecting valueless objects and the inability to discard possessions. He was reported to have significant insight, but could not be persuaded to attempt therapy because of ambivalence towards change.

Eating, gambling, tics, and autism

A large empirical study by Halmi et al. (90) among patients with anorexia nervosa (AN) ($n = 324$) displayed between 68 and 79% (depending on the AN subtype) lifetime prevalence of additional obsessive–compulsive symptoms. The patients were assessed with Y-BCOS. In certain symptom categories, including hoarding, the AN patients did not differ from controls with OCD. The strong relation between eating disorders and OCD in general has been demonstrated by numerous authors before (91–93). Frankenburg (94) published a case study of a female with AN, who hoarded paper, toothpaste tube caps, screws and nails. Impulse-control problems and obsessive and borderline personality characteristics might have exacerbated by starvation, the author suggested. Brener (95) studied a group of 102 female shoplifters. High rates of eating disorders have been stated in this group and among them high levels of additional psychiatric symptoms, including hoarding. Frost et al. (96) assessed pathological gamblers with Y-BOCS and found high scores of OCD symptoms (including hoarding) and compulsive buying, supporting other authors' suggestions of an overlap between OCD and impulse-control disorders.

Zhang et al. (97) mentioned a *hoarding phenotype* of Gilles de la Tourette syndrome (GTS) in their genome analysis study of 77 sibling pairs with GTS. Although the 77 pairs were concordant in GTS, they were not in their hoarding behaviour. To assess the phenotypes, the authors used a structured interview, developed especially to assess Tourette patients (based on Y-BOCS for the assessment of OCD-Symptoms). Hoarding in Tourette patients was found to be linked with three regions on three chromosomes (4q, 5q, 17q). Moll et al. (73) investigated obsessive–compulsive symptoms in attention deficit hyperactivity disorder (ADHD) children ($n = 41$) and in children with chronic TD/Tourette's syndrome ($n = 38$). Unexpectedly, the ADHD children showed in self-report scales more obsessive–compulsive symptoms than the TD children, particular high scores were reported for hoarding. In contrast, only children with TD showed clinically relevant OCD according to experts.

Several articles investigated hoarding and other obsessive–compulsive symptoms in patients with Prader-Willi syndrome, a paediatric entity caused by a genetic defect and characterized by mental retardation, hyperphagia, obesity, short stature, small hands and feet, and hypogonadism. Dykens and Shah (98) assessed psychopathological symptoms in PW patients and found among others high frequencies of non-food compulsions like skin-picking (most frequent), hoarding, redoing, concerns about symmetry, exactness, cleanliness, ordering, and arranging. Selective-serotonin reuptake inhibitors (SSRIs) were reported to be effective to reduce compulsions in some individuals. Dykens et al. (99) examined in another study a sample of 91 patients with PW syndrome for obsessive–compulsive symptoms using Y-BCOS. They found proportions from 37–58% for OCD symptoms like hoarding (58%), ordering and arranging, concerns with symmetry and exactness, rewriting, needs to ask and tell, and 64% showed symptom-related distress. Clarke et al. (100) found in their study on PW patients high rates of ritualistic behaviours such as the need to ask or tell, insistence on routines, hoarding (23.7%) and

ordering objects, repetitive actions and speech. The authors remarked that standard OCD checklists were not valid and reliable to assess patients with intellectual disability, so they used a specially developed instrument, the Prader-Willi Structured Interview Questionnaire. They also emphasized a clear distinction between ritualistic behaviours (which they found frequently in their sample) and obsessive–compulsive symptoms like checking, counting and cleaning compulsions or obsessional thoughts (which they hardly found among the PW patients). McDougle et al. (101) investigated repetitive thoughts and behaviours in adults with autistic disorder ($n = 50$) and OCD ($n = 50$), applying Y-BOCS. Compared with the obsessive–compulsive group, the autistic patients were significantly less likely to experience thoughts with aggressive, contamination, sexual, religious, symmetry, and somatic content. Repetitive ordering, hoarding, telling or asking, touching, tapping, or rubbing and self-damaging or self-mutilating behaviour however occurred significantly more frequently in the autistic patients.

Volle et al. (102) presented a case of a patient with a pathologic collecting behaviour after bilateral damage of orbito- and polar prefrontal cortex. The authors propose the notion *collectionism* or *forced collectionism* with reference to older neurologic literature. Yet they feel not completely satisfied with these notions, because of misleading allegations to true collectors. They prefer the term *prehension behaviour* instead to describe an irrepressible need to seize surrounding objects. Hahm et al. (103) reported a similar case: a patient with a left orbitofrontal and caudate injury after an aneurysmal rupture of anterior communicating artery had developed the egosyntonic compulsion to collect toy bullets. The authors classified it to be an impulse-control disorder rather than an OCD. Lane et al. (104) presented a patient they had successfully treated with behavioural therapy. After brain injury he had started to hoard large quantities of unusable items at every opportunity.

Tracy et al. (17) assessed repetitive behaviours in 400 schizophrenic inpatients using the Elgin Behavioural Rating Scale. They found five clusters of repetitive behavioural abnormities, among them the cluster *bizarre use of objects, bizarre grooming and hoarding*. Also in the study of Luchins et al. (18), who assessed 32 chronically institutionalized schizophrenic patients with the same instrument, hoarding was found as a common behavioural abnormity. In an earlier study, Luchins had proposed a possible neuroanatomical pathogenesis for this type of repetitive behaviours in schizophrenics involving hippocampal dysfunction (105).

Patronek (106), Kuehn (107) and Beeler (108) reported in veterinary journals about persons, who are hoarding animals [also Frost (28) mentioned the problem]. These people (the majority are females) are keeping up to 100 animals of all kinds, mostly in neglected conditions. There seems to be more concern about the animals' conditions than the hoarders' (which may be right), so no further information on the hoarders' mental status was given. Greenberg (109) described four cases of compulsive hoarding. The subjects showed no clear signs of psychosis, diminished insight and little interest in receiving treatment. The same author (110) presented later eight cases of hoarding and added theoretical comments on the nature of collecting and hoarding behaviour. Given the great variety of the presented cases the authors concluded that hoarding is the final common pathway for a variety of processes. In their distinction, *collecting* is a normal human behaviour in childhood and adult life, while *hoarding* is characterized as the gathering, ordering, and disposal of articles without clear conscious motivation or control. In a review article entitled 'Hoarding: a symptom, not a syndrome' Damecour and Charron (111) concluded, that hoarding behaviour spanned a continuum from normal collecting to pathological self-neglect and could be associated with a variety of psychiatric disorders. They also mention non-clinical populations (self-named *pack rats*, see below) as hoarders, a population usually ignored in scientific literature.

In German speaking literature hoarding has gathered some attention from the mid-80s through the above-mentioned article on the Diogenes syndrome by Klosterkötter et al. (31). Dettmering introduced in 1985 the German expression *Vermüllungssyndrom* (112), which means in direct translation 'syndrome of complete congestion with garbage'. The expression covers basically the Diogenes syndrome condition, but is often used synonymously for *hoarding* (9, 10), as there is no direct German translation of the word. This synonymous use however is misleading because hoarding does not necessarily end up in neglect (as repeatedly reported in the above-mentioned literature). Expressions like *refuse hoarding syndrome* or *litter hoarding syndrome* have been used by German speaking authors (9).

Outside scientific psychiatric literature (and psychiatrists' perception) there is a considerable and growing self-help movement of people with hoarding habits. They organize themselves under the self-given names *messies* or *pack rats* and

can be found through internet sites and self-help books (113–115) http://www.geocities.com/Heartland/Meadows/3337/ ('The messies' home on the web'), http://www.messies.com/ (Homepage of Messies Anonymous, run by Sandra Felton)]. They define themselves as ordinary vivid people, suffering only from their tendency to create a mess in their houses and apartments. Felton gives in her self-help book a list of different types of messies according to the varying type of hoarding behaviour (114). There seems to be an overlap to the *procrastination* self-help movement (http://www.mentalhelp.net/psyhelp/chap4/chap4r.htm), people who suffer from their tendency to procrastinate tasks and duties. This is congruent with Frost's findings about indecisiveness and procrastination in compulsive hoarders (116). Most of the subjects displaying this kind of behavioural abnormities appear to have fair social functioning and may not manifest further psychopathological signs.

Discussion

After reviewing the heterogeneous literature on hoarding, it appears difficult to establish more clarity about the phenomenon. It may be helpful to remind briefly the definitions of three psychopathological concepts, which are important when discussing the matter in the following:

1. *Compulsion*: repetitive behaviour or thought, a person feels driven to perform in response to an obsession. The behaviour or thought aims to reduce distress or anxiety resulting from the obsessive thought. Obsessive–compulsive symptoms are usually ego-dystonic and cause discomfort (although with longer duration they may become ego-syntonic).
2. *Impulse/impulse-control disorder*: drive to perform some act/failure to resist that drive, even when the act is harmful to oneself or to others. Impulses are related with a sense of tension before committing and pleasure or release after committing the act. There are no further thoughts or ideas associated with the content of the impulse, they are usually experienced as ego-syntonic.
3. *Stereotypic, ritualistic behaviours, tics*: abnormal repetitive, unvarying, and functionless motor acts and behaviours. They often occur in response to some kind of emotional distress and are under volitional control to some limited extent. No anxiety or distress prior to the motor action can be identified.

When approaching hoarding clinically, it is indispensable to outline its complexity in relation to the aforementioned concepts. There are three subsequent components of the behaviour to be identified [cf. the corresponding threefold distinction in (6): 'compulsive acquisition – difficulty discarding – clutter']:

I. the act of collection or acquisition of objects (=behaviour) and possible related intentions, emotions and thoughts;
II. the behaviour of storing, keeping and not discarding the objects and related intentions, emotions and thoughts;
III. the (possible) resulting condition of severe neglect of living space and personal appearance.

To assess hoarding comprehensively, it will be useful to evaluate these three components apart, although it has been demonstrated, that they are significantly intercorrelated (6):

To 'I' the collecting or gathering of items constitutes the starting component of hoarding. Pathological behaviours may be involved at that point, however in many cases, the acquisition of objects is not the result of abnormal habits or ideas. Sometimes the objects are accumulated slowly through normal daily life (newspapers, letters, wrappings, bottles, cans, food, clothes, devices, etc.), without additional efforts of the hoarder. Some hoarders are collecting items with moderate intensity and reasonable motives, just like non-hoarding collectors. The difference (the abnormity) does not consist in the collecting behaviour itself, but in the failure of discarding objects at the point of excess (see below). There are hoarders however with clearly pathological habits of acquisition: compulsive buying is reported in association with hoarding (88, 96, 117, 118), although not by many authors. In fact the notion 'compulsive' is misleading, for it is not a compulsion but an impulse-control deficit. Some authors use the notion 'uncontrolled buying', which seems more appropriate (119, 120). Also kleptomania [which may be another form of the same condition (120)] and compulsive acquisition of free objects is observed in hoarders (92, 121). Apparently impulse-control disorders are related with hoarding and the relation manifests in the phenomenology of acquisition. Frost remarked (96) that the acquiring and saving of objects in hoarders is often associated with the experience of pleasure rather than avoidance of an obsessional fear. The importance of real impulse-control deficits for the development of hoarding in general remains unclear although. Frost et al. (118) report significant associations between hoarding and compulsive buying, but they seem

to be the only researchers to have investigated that issue carefully.

In many cases of the reviewed literature however, the nature of the collecting behaviour appears to be completely different and highly pathologic: patients with chronic schizophrenia, TDs, autism, PW syndrome, dementia, brain injuries, mental retardation, etc. display stereotypic, ritualistic collecting and grasping behaviours. This behaviour has seemingly not the psychopathologic structure of a compulsion or even impulse-control disorder. It is just motor activity without clear intention or aim, hence stereotypic, ritualistic, even tic-like behaviour.

To 'II' Frost, a leading researcher on hoarding has presented important theoretical considerations about the reasons for saving and not discarding objects (1, 117, 121, 122). Based on cognitive-behavioural models (1) he conceptualizes hoarding to be a multifaceted problem resulting from: (i) information processing deficits, (ii) problems in forming emotional attachments, (iii) behavioural avoidance and (iv) erroneous beliefs about the nature of possessions. All these features interfere mainly with the ability to discard unusable items and to clear up the living space. In an earlier paper Frost and Gross (122) had already stated, that hoarding is associated with indecisiveness and perfectionism. Empirical findings support this association (15, 36, 121). Hoarders tend to buy extra things in order not to be caught without a needed item, and they often carry 'just-in-case' items in purses, pockets and cars. Frost and Gross suggest a model which conceptualizes hoarding as avoidance behaviour: 'Saving allows the hoarder to avoid the decision required to throw something away, and the worry which accompanies that decision (worry that a mistake has been made). Also, it allows hoarders to avoid emotional reactions which accompany parting with cherished possessions, and results in increased perception of control' (122). So the second component of hoarding behaviour has in these cases the nature of an obsessive–compulsive sequence, although often without ego-dystonicity and discomfort. The presence of an obsessive–compulsive fundament can be uncovered clinically, when trying to remove hoarded items: patients will react with vigorous resistance to such attempts, sometimes even with panic. Yet one has to realize, that this is just one component of the behavioural abnormity of hoarding and not present in all cases. Especially the above-mentioned group of patients with stereotypic, ritualistic grasping behaviour might be quite indifferent towards the removal of hoarded objects. Detailed reports about this are scarce and controversial however (10, 102–104, 109, 110).

To 'III' the possible result of hoarding is the complete neglect of the hoarder's own living space. According to Frost's definition of compulsive hoarding (1), the condition 'living spaces are sufficiently cluttered so as to preclude activities for which those spaces were designed' is mandatory for the notion. This definition is clinically sensible, but restricted to what Frost calls *clinical compulsive hoarding*. In many of the reviewed papers, the term hoarding is used to characterize patients, who did not live in such conditions, but still showed hoarding behaviour. Obviously neglecting of the living space is a possible consequence of hoarding. Whether it should be a definitory necessity or not, is a matter of discussion. If one includes the neglecting condition in the definition of hoarding, the term would be constricted considerably. We propose to keep a broader signification and to use specifying epithets instead. At any rate it is important to hold that many people who live in neglected and messy conditions are not hoarders in the sense proposed in this paper, for they neither show any specific activities in collecting, nor any specific avoidance in discarding objects. They simply cannot care for their living conditions due to different reasons, among them mental impairment, addiction, severe depression, social isolation.

It can be concluded that the psychopathological structure of hoarding spans from obsessive–compulsive symptoms to impulse-control deficits and reaches to ritualistic/tic-like behaviour. It reflects the relations as well as the distinct nature of these concepts. There are analogous debates about the status of several other symptoms within the overlap zone between OCDs, impulse-control disorders and TDs, suggesting that these theoretically distinct concepts might not be completely distinct in clinical reality [cf. (96) for gambling, (119, 120, 123, 124) for compulsive buying, (125–128) for trichotillomania, (129) for olfactory reference syndrome, (130) for Tourette's syndrome]. We may have to accept that concepts are merely heuristic guideposts, helping us to find our way in complex reality. Despite this sketchiness it still makes sense to use these concepts in clinical debate, because clinicians' perception is structured by them and therapeutic approaches are evaluated mostly according to these concepts. In addition, the phenomenon of hoarding has therefore to be assessed and described in relation to these psychopathologic concepts, although it will not be possible to fit every single case properly into the distinct categories of diagnostic manuals.

Whenever in a subject hoarding behaviour or the presence of hoarded items is observed, a thorough psychopathological evaluation should be performed to clarify the nature of the behaviour. This has important consequences for therapeutic approaches, because different effective therapies have been reported for different clinical situations. As there are no measuring instruments covering the whole spectrum of hoarding as presented above, it is optional to use established instruments for assessment [cf. Steketee and Frost (6) on the issue of assessment instruments].

According to the aforementioned threefold distinction, we propose the following evaluation to be made in every specific case of hoarding:

1. The nature and possible psychopathological structure of the collecting behaviour. If it is pathologic, this may be in the sense of an impulse-control disorder (e.g. compulsive buying, kleptomania). These cases should be diagnosed and treated like that. It could be pathologic in the sense of a stereotypic, ritualistic grasping behaviour. In these cases the appropriate diagnosis and notion is debatable. Depending from the main diagnosis (e.g. dementia, chronic schizophrenia, PW syndrome, autism, etc.), it may not be necessary to give an extra diagnosis. Probably it would be even recommendable and less confusing to avoid the term hoarding to describe this type of behaviour and to use notions like prehension behaviour (102) or collectionism (102) instead. Unfortunately the notion 'hoarding' is well established already, especially in geriatric literature and textbooks. In these situations treatment with neuroleptics (26), SSRIs (98), or behavioural therapy (104) are reported to be effective. Distinct obsessive–compulsive elements are less frequent in connection with the collecting behaviour itself, although possible. If so, it should be diagnosed and treated correspondingly.

2. The nature and possible psychopathology of the behaviour related to the storing and not discarding of the hoarded objects. Is there resistance towards other people removing these items? Is there avoidance of discarding useless objects? Are there idiosyncratic thoughts and ideas about possessions? In these cases it may be possible to identify characteristic obsessive–compulsive sequences. If full criteria for OCD or OCPD are not met, the subject may range in the non-clinical (maybe preclinical) group of pack rats and messies. If OCD is present, it is justified to use the notion *compulsive hoarding* to describe the behaviour. We propose to do so, also in order to underline the precise nature of the present symptom and to distinguish it from other hoarding conditions. Frost's definition of *clinical compulsive hoarding* (1), which includes additional features (inhabitable living space due to clutter) describes in our opinion a syndrome and belongs therefore to a different categorical level. It should not be overseen that resistance towards removing and avoidance of discarding (with or without further obsessive–compulsive symptoms) may also occur in the course of other disorders than ODC, for example schizophrenia, depression, dementia. In such cases hoarding should be described as a symptom of these disorders. For the treatment of OCD the corresponding recommendations should be followed. As mentioned repeatedly above, hoarding in OCD patients is associated with poorer outcomes and with weaker adherence to treatments than in average OCD patients. Still SSRIs and CBT are reported to have some effect on compulsive hoarding (7, 8, 77, 80, 82, 83, 131).

3. In cases of severe neglect of the living space, one should assess the underlying behavioural abnormities as described in the two previous paragraphs. There is no doubt that hoarding behaviour can lead to neglect, but does not necessarily have to (except if one defines neglect as mandatory feature of hoarding, which does not reflect the current use of the term). In many cases hoarding precedes neglect by years and people only may become neglected when in higher age vigour diminishes to clear up the house. Neglect and clutter in return can be the consequences of hoarding, but hoarding is not a necessary precondition of it. Frequently this condition is the result of the inability to clean up (caused e.g. by physical illness, overcharge as single mother, alcoholism or other addictions, cognitive impairment due to dementia, etc.) without proper hoarding behaviour in the sense of the above-given definitions. In such cases one should for reasons of conceptual accuracy avoid to use the term hoarding. Severe neglect of the living space and self-neglect is a serious problem involving health authorities, clinicians, nurses, and social workers. Professional treatment of underlying mental and physical disorders is highly advisable, but often difficult because of defiant attitudes of these patients (9–11, 27–29).

References

1. Frost RO, Hartl TL. A cognitive-behavioral model of compulsive hoarding. Behav Res Ther 1996;**34**:341–350.
2. Herberg LJ, Blundell JE. Lateral hypothalamus: hoarding behaviour elicited by electrical stimulation. Science 1967;**155**:349–350.
3. Manosevitz M, Lindzey G. Genetics of hoarding: a biomedical analysis. J Comp Physiol Psychol 1967;**63**:142–144.

4. Wishart T, Brohman L, Mogenson G. Effects of lesions of the hippocampus and septum on hoarding behaviour. Anim Behav 1969;**17**:781–784.
5. Bolman WM, Katz AS. Hamburger hoarding: a case of symbolic cannibalism resembling Whitico psychosis. J Nerv Ment Dis 1966;**142**:424–428.
6. Steketee G, Frost R. Compulsive hoarding: current status of the research. Clin Psychol Rev 2003;**23**:905–927.
7. Saxena S, Maidment KM, Vapnik T et al. Obsessive-compulsive hoarding: symptom severity and response to multimodal treatment. J Clin Psychiatry 2002;**63**:21–27.
8. Cermele JA, Melendez-Pallitto L, Pandina GJ. Intervention in compulsive hoarding. A case study. Behav Modif 2001;**25**:214–232.
9. Juergens A. Refuse hoarding syndrome. Psychiatr Prax 2000;**27**:42–46 [in German].
10. Pastenaci R, Dettmering P. Refuse hoarding syndrome. Verlag Dietmar Klotz Eschborn bei Frankfurt am Main, 2000 [in German].
11. Clark AN, Mankikar GD, Gray I. Diogenes syndrome. A clinical study of gross neglect in old age. Lancet 1975;**1**:366–368.
12. American Psychiatric Association. Diagnostic and statistic manual of mental disorders, 4th edn. Washington, DC: American Psychiatric Association.
13. Goodman WK, Price LH. Assessment of severity and change in obsessive-compulsive disorders. Psychiatr Clin North Am 1992;**15**:861–869.
14. Goodman WK, Price LH, Rasmussen SA et al. The Yale-Brown Obsessive Compulsive Scale: I: development, use and reliability. Arch Gen Psychiatry 1989;**46**:1006–1011.
15. Coles ME, Frost RO, Heimberg RG, Steketee G. Hoarding behaviors in a large college sample. Behav Res Ther 2003;**41**:179–194.
16. Frost RO, Steketee G, Williams LF, Warren R. Mood, personality disorder symptoms and disability in obsessive compulsive hoarders: a comparison with clinical and nonclinical controls. Behav Res Ther 2000;**38**:1071–1081.
17. Tracy JI, de Leon J, Qureshi G, McCann EM, McGrory A, Josiassen RC. Repetitive behaviors in schizophrenia: a single disturbance or discrete symptoms? Schizophr Res 1996;**20**:221–229.
18. Luchins DJ, Goldman MB, Lieb M, Hanrahan P. Repetitive behaviors in chronically institutionalized schizophrenic patients. Schizophr Res 1992;**8**:119–123.
19. Seedat S, Stein DJ. Hoarding in obsessive-compulsive disorder and related disorders: a preliminary report of 15 cases. Psychiatry Clin Neurosci 2002;**56**:17–23.
20. Berlyne N. Letter to the editor commenting [10]. Lancet 1975;**1**:515.
21. Twomey J. Letter to the editor commenting [10]. Lancet 1975;**1**:515.
22. Flannery GR, Rolland JM, Nairn RC. Letter to the editor commenting [10]. Lancet 1975;**1**:750–751.
23. Macmillan D, Shaw P. Senile breakdown in standards of personal and environmental cleanliness. Br Med J 1966;**2**:1032–1037.
24. Bergman K. Senile self-neglect (Diogenes' syndrome). In: Jacoby R, Oppenheimer C, eds. Psychiatry in the elderly. Oxford: Oxford University Press, 1991:862–863.
25. Hwang JP, Tsai SJ, Yang CH, Liu KM, Lirng JF. Hoarding behavior in dementia. A preliminary report. Am J Geriatr Psychiatry 1998;**6**:285–289.
26. Stein DJ, Laszlo B, Marais E, Seedat S, Potocnik F. Hoarding symptoms in patients on a geriatric psychiatry inpatient unit. S Afr Med J 1997;**87**:1138–1140.
27. Kim HJ, Steketee G, Frost RO. Hoarding by elderly people. Health Soc Work 2001;**26**:176–184. Erratum in: Health Soc Work 2001;**26**:234.
28. Frost RO, Steketee G, Williams L. Hoarding: a community health problem. Health Soc Care Community 2000;**8**:229–234.
29. Hurley M, Scallan E, Johnson H, De La Harpe D. Adult service refusers in the greater Dublin area. Ir Med J 2000;**93**:207–211.
30. Hwang JP, Yang CH, Tsai SJ, Liu KM. Behavioural disturbances in psychiatric inpatients with dementia of the Alzheimer's type in Taiwan. Int J Geriatr Psychiatry 1997;**12**:902–906.
31. Klosterkötter J, Peters UH. Diogenes syndrome. Fortschr Neurol Psychiatr 1985;**53**:427–434 [in German].
32. Roberge RF. Diogenes' syndrome. A geriatric entity. Can Fam Physician 1998;**44**:812–817 [in French].
33. Reyes-Ortiz CA. Diogenes syndrome: the self-neglect elderly. Compr Ther 2001;**27**:117–121.
34. Beauchet O, Imler D, Cadet L et al. Diogenes syndrome in the elderly: clinical form of frontal dysfunction? Report of 4 cases. Rev Med Intern 2002;**23**:122–131 [in French].
35. Hogstel MO. Understanding hoarding behaviors in the elderly. Am J Nurs 1993;**93**:42–45.
36. Brannstrom B. Falling, hoarding and hiding, eating disturbances, and sexual disinhibition. Int Psychogeriatr 1996;**8**(suppl. 3):419–422.
37. Radebaugh TS, Hooper FJ, Gruenberg EM. The Social Breakdown syndrome in the elderly population living in the community: the Helping Study. Br J Psychiatry 1987;**151**:341–346.
38. Kummer J, Gundel L. Sleep-wake rhythm disorders in the framework of a Diogenes syndrome. Improvement in sleep architecture using supportive treatment with zolpidem. Fortschr Med 1995;**113**:149–150 [in German].
39. Clark J. Senile squalor syndrome: two unusual cases. J R Soc Med 1999;**92**:138–140.
40. Cooney C, Hamid W. Review: Diogenes syndrome. Age Ageing 1995;**24**:451–453.
41. Cybulska E, Rucinski J. Gross self-neglect in old age. Br J Hosp Med 1986;**36**:21–25.
42. Melendro JC, Sanchez Malo P, Ruiz de Azagra JV, Marron Gasca J. Sindrome de Diogenes: Un cuadro frecuente en la vejez y poco conocido. Actas Dermo-Sifiliogr 1976;**67**:225–232 [in Spanish].
43. Reifler BV. Diogenes syndrome: of omelettes and soufflés. J Am Geriatr Soc 1996;**44**:1484–1485.
44. Ngeh J. Diogenes syndrome presenting with a stroke in an elderly bereaved woman. Int J Geriatr Psychiatry 2000;**15**:468–469.
45. Rosenthal M, Stelian J, Wagner J, Berkaman P. Diogenes syndrome and hoarding in the elderly: case reports. Isr J Psychiatry Relat Sci 1999;**36**:29–34.
46. Gannon M, O'Boyle J. Diogenes syndrome. Ir Med J 1992;**85**:124.
47. O'Shea B, Falvey J. Diogenes' syndrome: review and case history. Ir J Psychol Med 1997;**14**:115–116.
48. Shehan B, Geddes J. The Diogenes syndrome. Review and case history. Ir J Psychol Med 1998;**15**:77.
49. Wrigley M, Cooney C. Diogenes syndrome. An Irish series. Ir J Psychol Med 1992;**9**:37–41.
50. Drummond LM, Turner J, Reid S. Diogenes syndrome: a load of old rubbish? Ir J Psychol Med 1997;**14**:99–102.
51. Vostanis P, Dean C. Self-neglect in adult life. Br J Psychiatry 1992;**161**:265–267.

52. Williams H, Clarke R, Fashola Y, Holt G. Diogenes' syndrome in patients with intellectual disability: 'a rose by any other name'? J Intellect Disabil Res 1998;**42**(Pt 4):316–320.
53. Kafetz K. Alcohol excess and the senile squalor syndrome. J Am Geriatr Soc 1982;**30**:706.
54. Blondell R. Alcohol abuse and self-neglect in the elderly. J Elder Abuse Neglect 1999;**11**:55–75.
55. Lustbader W. Self-neglect: a practitioner's view. Ageing 1996;**367**:51–60.
56. Cole AJ, Gilet TP, Fairbairn A. A case of senile self neglect in a married couple: 'Diogenes à deux'. Int J Geriatr Psychiatry 1992;**7**:839–841.
57. O'Mahony D, Evans JG. Diogenes syndrome by proxy. Br J Psychiatry 1994;**164**:705–706.
58. Grignon S, Bassiri D, Bartoli JL, Calvet P. Association of Diogenes syndrome with a compulsive disorder. Can J Psychiatry 1999;**44**:91–92.
59. Clark ANG. How to assess severe, self-imposed neglect. Geriatr Med 1980;**Feb**:65–67.
60. Clark AN. The Diogenes syndrome. Nurs Times 1975;**71**:800–802.
61. Jackson GA. A case of Diogenes syndrome. J Ment Health 1997;**6**:113–116.
62. Johnson J, Adams J. Self-neglect in later life. Health and Social Care in the Community 1996;**4**:226–233.
63. Snowdon J. Uncleanliness among persons seen by community health workers. Hospital Community Psychiatry 1987;**38**:491–494.
64. Lauder W. Constructions of self-neglect: a multiple case study design. Nurs Inquiry 1999;**6**:48–57.
65. Moore R. Diogenes syndrome. Nurs Times 1989;**85**:46–48.
66. Adams J, Johnson J. Nurses' perceptions of gross self-neglect amongst older people living in the community. J Clin Nurs 1998;**7**:547–552.
67. O'Brian J, Thibault J, Turner L, Laird-Flick H. Self-neglect: an overview. J Elder Abuse Neglect 1999;**11**:1–19.
68. Frost RO, Steketee G, Youngren VR, Mallya GK. The threat of the housing inspector: a case of hoarding. Harv Rev Psychiatry 1999;**6**:270–278.
69. Thibault J, O'Brian J, Turner L. Indirect life-threatening behaviour in elderly patients. J Elder Abuse Neglect 1999;**11**:21–32.
70. McIntosh J, Hubbard R. Indirect self-destructive behavior among the elderly: a review with case examples. J Gerontol Social Work 1988;**13**:37–46.
71. Baer L. Factor analysis of symptom subtypes of obsessive compulsive disorder and their relation to personality and tic disorders. J Clin Psychiatry 1994;**55**(suppl.):18–23.
72. Hanna GL, Piacentini J, Cantwell DP, Fischer DJ, Himle JA, Van Etten M. Obsessive-compulsive disorder with and without tics in a clinical sample of children and adolescents. Depress Anxiety 2002;**16**:59–63.
73. Moll GH, Eysenbach K, Woerner W, Banaschewski T, Schmidt MH, Rothenberger A. Quantitative and qualitative aspects of obsessive-compulsive behaviour in children with attention-deficit hyperactivity disorder compared with tic disorder. Acta Psychiatr Scand 2000;**101**:389–394.
74. Calamari JE, Wiegartz PS, Janeck AS. Obsessive-compulsive disorder subgroups: a symptom-based clustering approach. Behav Res Ther 1999;**37**:113–125.
75. Summerfeldt LJ, Richter MA, Antony MM, Swinson RP. Symptom structure in obsessive-compulsive disorder: a confirmatory factor-analytic study. Behav Res Ther 1999;**37**:297–311.
76. Samuels J, Bienvenu OJ, III, Riddle MA et al. Hoarding in obsessive compulsive disorder: results from a case-control study. Behav Res Ther 2002;**40**:517–528.
77. Ball SG, Baer L, Otto MW. Symptom subtypes of obsessive-compulsive disorder in behavioral treatment studies: a quantitative review. Behav Res Ther 1996;**34**:47–51.
78. Frost RO, Krause MS, Steketee G. Hoarding and obsessive-compulsive symptoms. Behav Modif 1996;**20**:116–132.
79. Mataix-Cols D, Baer L, Rauch SL, Jenike MA. Relation of factor-analyzed symptom dimensions of obsessive-compulsive disorder to personality disorders. Acta Psychiatr Scand 2000;**102**:199–202.
80. Black DW, Monahan P, Gable J, Blum N, Clancy G, Baker P. Hoarding and treatment response in 38 nondepressed subjects with obsessive-compulsive disorder. J Clin Psychiatry 1998;**59**:420–425.
81. Mataix-Cols D, Rauch SL, Manzo PA, Jenike MA, Baer L. Use of factor-analyzed symptom dimensions to predict outcome with serotonin reuptake inhibitors and placebo in the treatment of obsessive-compulsive disorder. Am J Psychiatry 1999;**156**:1409–1416.
82. Mataix-Cols D, Marks IM, Greist JH, Kobak KA, Baer L. Obsessive-compulsive symptom dimensions as predictors of compliance with and response to behaviour therapy: results from a controlled trial. Psychother Psychosom 2002;**71**:255–262.
83. Christensen DD, Greist JH. The challenge of obsessive-compulsive disorder hoarding. CNS Spectr 2000;**5**:79–86.
84. Hantouche EG, Angst J, Demonfaucon C, Perugi G, Lancrenon S, Akiskal HS. Cyclothymic OCD: a distinct form? J Affect Disord 2003;**75**:1–10.
85. Hantouche EG, Demonfaucon C, Angst J, Perugi G, Allilaire JF, Akiskal HS. Cyclothymic obsessive-compulsive disorder. Clinical characteristics of a neglected and underrecognized entity. Presse Med 2002;**31**:644–648 [in French]
86. Hantouche EG, Lancrenon S. Modern typology of symptoms and obsessive-compulsive syndromes: results of a large French study of 615 patients. Encephale 1996;**22**:9–21 [in French].
87. Stein DJ, Seedat S, Potocnik F. Hoarding: a review. Isr J Psychiatry Relat Sci 1999;**36**:35–46.
88. Winsberg ME, Cassic KS, Koran LM. Hoarding in obsessive-compulsive disorder: a report of 20 cases. J Clin Psychiatry 1999;**60**:591–597.
89. Fitzgerald PB. 'The bowerbird symptom': a case of severe hoarding of possessions. Aust N Z J Psychiatry 1997;**31**:597–600.
90. Halmi KA, Sunday SR, Klump KL et al. Obsessions and compulsions in anorexia nervosa subtypes. Int J Eat Disord 2003;**33**:308–319.
91. Bulik CM, Tozzi F, Anderson C, Mazzeo SE, Aggen S, Sullivan PF. The relation between eating disorders and components of perfectionism. Am J Psychiatry 2003;**160**:366–368.
92. Anderluh MB, Tchanturia K, Rabe-Hesketh S, Treasure J. Childhood obsessive-compulsive personality traits in adult women with eating disorders: defining a broader eating disorder phenotype. Am J Psychiatry 2003;**160**:242–247.
93. Milos G, Spindler A, Ruggiero G, Klaghofer R, Schnyder U. Comorbidity of obsessive-compulsive disorders and duration of eating disorders. Int J Eat Disord 2002;**31**:284–289.

94. Frankenburg FR. Hoarding in anorexia nervosa. Br J Med Psychol 1984;**57**(Pt 1):57–60.
95. Brener N. Eating disorders and shoplifting – a study in two settings. Med Sci Law 1993;**33**:223–226.
96. Frost RO, Meagher BM, Riskind JH. Obsessive-compulsive features in pathological lottery and scratch-ticket gamblers. J Gambl Stud 2001;**17**:5–19.
97. Zhang H, Leckman JF, Pauls DL, Tsai CP, Kidd KK, Campos MR. Genomewide scan of hoarding in sib pairs in which both sibs have Gilles de la Tourette syndrome. Am J Hum Genet 2002;**70**:896–904.
98. Dykens E, Shah B. Psychiatric disorders in Prader-Willi syndrome: epidemiology and management. CNS Drugs 2003;**17**:167–178.
99. Dykens EM, Leckman JF, Cassidy SB. Obsessions and compulsions in Prader-Willi syndrome. J Child Psychol Psychiatry 1996;**37**:995–1002.
100. Clarke DJ, Boer H, Whittington J, Holland A, Butler J, Webb T. Prader-Willi syndrome, compulsive and ritualistic behaviours: the first population-based survey. Br J Psychiatry 2002;**180**:358–362.
101. McDougle CJ, Kresch LE, Goodman WK et al. A case-controlled study of repetitive thoughts and behavior in adults with autistic disorder and obsessive-compulsive disorder. Am J Psychiatry 1995;**152**:772–777.
102. Volle E, Beato R, Levy R, Dubois B. Forced collectionism after orbitofrontal damage. Neurology 2002;**58**:488–490.
103. Hahm DS, Kang Y, Cheong SS, Na DL. A compulsive collecting behavior following an A-com aneurysmal rupture. Neurology 2001;**56**:398–400.
104. Lane IM, Wesolowski MD, Burke WH. Teaching socially appropriate behavior to eliminate hoarding in a brain injured adult. J Behav Ther Exp Psychiatry 1989;**20**:79–82.
105. Luchins DJ. A possible role of hippocampal dysfunction in schizophrenic symptomatology. Biol Psychiatry 1990;**28**:87–91.
106. Patronek GJ. Hoarding of animals: an under-recognized public health problem in a difficult-to-study population. Public Health Rep 1999;**114**:81–87.
107. Kuehn BM. Lawmakers tackle animal hoarding. J Am Vet Med Assoc 2003;**222**:1190.
108. Beeler E. Earlier intervention needed in animal-hoarding cases. J Am Vet Med Assoc 2003;**222**:1674.
109. Greenberg D. Compulsive hoarding. Am J Psychother 1987;**41**:409–416.
110. Greenberg D, Witztum E, Levy A. Hoarding as a psychiatric symptom. J Clin Psychiatry 1990;**51**:417–421.
111. Damecour CL, Charron M. Hoarding: a symptom, not a syndrome. J Clin Psychiatry 1998;**59**:267–272.
112. Dettmering P. Das 'Vermüllungssyndrom' – ein bisher unbekanntes Krankheitsbild. Oeff Gesundheitswesen 1985;**47**:17–19 (in German).
113. Nudelman P. The secret handbook for perpetually paralyzed procrastinating pack rats anonymous. Los Gatos, CA: Panacea Publishers, 1999. ISBN 0966665600.
114. Felton S. The new messies manual: the procrastinator's guide to good housekeeping, 3rd edn. Grand Rapids, MI: Fleming H Revell Co, 2000. ISBN 0800757262.
115. Felton S. The messie motivator: new strategies to restoring order in your life and home (Messies Series). Grand Rapids, MI: Fleming H Revell Co, 1996. ISBN: 0800756088.
116. Frost RO, Shows DL. The nature and measurement of compulsive indecisiveness. Behav Res Ther 1993;**31**:683–692.
117. Frost RO, Kim HJ, Morris C, Bloss C, Murray-Close M, Steketee G. Hoarding, compulsive buying and reasons for saving. Behav Res Ther 1998;**36**:657–664.
118. Frost RO, Steketee G, Williams L. Compulsive buying, compulsive hoarding, and obsessive-compulsive disorder. Behav Ther 2002;**33**:201–214.
119. Lejoyeux M, Ades J, Tassain V, Solomon J. Phenomenology and psychopathology of uncontrolled buying. Am J Psychiatry 1996;**153**:1524–1529.
120. Maier T. Uncontrolled buying. Am J Psychiatry 1997;**154**:1477–1478.
121. Frost RO, Hartl TL, Christian R, Williams N. The value of possessions in compulsive hoarding: patterns of use and attachment. Behav Res Ther 1995;**33**:897–902.
122. Frost RO, Gross RC. The hoarding of possessions. Behav Res Ther 1993;**31**:367–381.
123. du Toit PL, van Kradenburg J, Niehaus D, Stein DJ. Comparison of obsessive-compulsive disorder patients with and without comorbid putative obsessive-compulsive spectrum disorders using a structured clinical interview. Compr Psychiatry 2001;**42**:291–300.
124. Christenson GA, Faber RJ, de Zwaan M et al. Compulsive buying: descriptive characteristics and psychiatric comorbidity. J Clin Psychiatry 1994;**55**:5–11.
125. O'Sullivan RL, Keuthen NJ, Christenson GA, Mansueto CS, Stein DJ, Swedo SE. Trichotillomania: behavioural symptom or clinical syndrome? (clinical conference). Am J Psychiatry 1997;**154**:1442–1449.
126. O'Sullivan RL, Mansueto CS, Lerner EA, Miguel EC. Characterization of trichotillomania. A phenomenological model with clinical relevance to obsessive-compulsive spectrum disorders. Psychiatr Clin North Am 2000;**23**:587–604.
127. Jefferson JW. Book forum: Tic disorders, trichotillomania, and other repetitive behaviour disorders: behavioral approaches to analysis and treatment. Am J Psychiatry 2002;**159**:1954.
128. Miguel EC, Baer L, Coffey BJ et al. Phenomenological differences appearing with repetitive behaviours in obsessive-compulsive disorder and Gilles de la Tourette's syndrome. Br J Psychiatry 1997;**170**:140–145.
129. Stein DJ, Le Roux L, Bouwer C, Van Heerden B. Is olfactory reference syndrome an obsessive-compulsive spectrum disorder? Two cases and discussion. J Neuropsychiatry Clin Neurosci 1998;**10**:96–99.
130. Scamvougeras A. Challenging phenomenology in Tourette syndrome and obsessive-compulsive disorder: the benefits of reductionism. Bull Can Psychiatr Ass 2002;**1**:17–19.
131. Hartl TL, Frost RO. Cognitive-behavioral treatment of compulsive hoarding: a multiple baseline experimental study. Behav Res Ther 1999;**37**:451–461.